

FORM PTO-1449
(REV. 7-80)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEINFORMATION DISCLOSURE CITATION
(Uses several sheets if necessary)ATTY. DOCKET NO.
51813/8:1

APPLICATION NO.

APPLICANT

Steven William Doane and William McKee
Doane

FILING DATE

GROUP

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
tt	AA	4	4	8	3	9	5	0	11/20/84	Fanta et al.	524	48	
	AB	4	1	9	4	9	9	8	3/25/80	Fanta et al.	260	17.4 GC	
	AC	4	1	3	4	8	6	3	1/16/79	Fanta et al.	260	17.4 GC	
	AD	3	9	9	7	4	8	4	12/14/76	Weaver et al.	260	17.4 GC	
	AE	3	9	8	5	6	1	6	10/12/76	Weaver et al.	195	63	
	AF	3	9	8	1	1	0	0	9/21/76	Weaver et al.	47	58	
	AG	3	9	3	5	0	9	9	1/27/76	Weaver et al.	210	43	
	AH	4	0	7	6	6	6	3	2/28/1978	Masuda et al.	260	17.4 GC	

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													YES	NO	
	AI								—						

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

tt	AJ	"Absorbent Polymers from Starch and Flour Through Graft Polymerization of Acrylonitrile and Comonomer Mixtures," by G. F. Fanta, R. C. Burr, W. M. Doane, and C. R. Russell, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Starch/Stärke</i> 30 (1978) Nr. 7, S. 237-242.
	AK	"Swelling and Rheology of Saponified Starch-g-Polyacrylonitrile Copolymers. Effect of Starch Granule Pretreatment and Grafted Chain Length," by N. W. Taylor, G. F. Fanta, W. M. Doane, and C. R. Russell, <i>Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 22, 1343-1357 (1978).
	AL	"A Practical Process for the Preparation of Super Slurper, a Starch-Based Polymer with a Large Capacity to Absorb Water," by M. O. Weaver, R. R. Montgomery, L. D. Miller, V. E. Sohns, G. F. Fanta, and W. M. Doane, <i>Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604 (USA)</i> ; <i>Die Stärke</i> 29, Jahrg. 1977 / Nr. 12, S. 410-413.
	AM	"Graft Copolymers of Starch-Polyacrylonitrile Prepared by Ferrous Ion-Hydrogen Peroxide Initiation," by Edward I. Stout, Donald Trimmell, William M. Doane, and Charles R. Russell, <i>Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 21, 2565-2573 (1977).
	AN	"Rheology of a Cellulose Graft Copolymer. Comparison with Other Closely Packed Gel Thickeners," by N. W. Taylor and E. B. Bagley, <i>Northern Regional Research Laboratory, Agricultural Research Service, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 21, 1607-1613 (1977).
	AO	"Tailoring Closely Packed Gel-Particle Systems for Use as Thickening Agents," by N. W. Taylor and E. B. Bagley, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 21, 113-122 (1977).

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							YES	NO
	AX							

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

H	AY	"Rheology of Dispersions of Swollen Gel Particles," by N. W. Taylor and E. B. Bagley, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Polymer Science: Polymer Physics Edition</i> ; Vol. 13, 1133-1144 (1975).
	AZ	"Starch-Polyacrylonitrile Copolymers. Properties of Hydrogels," by E. B. Bagley and N. W. Taylor, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>I&EC Product Research & Development</i> , Vol. 14, Page 105, June 1975.
	BA	"Common Slurper Compound with a Super Thirst," reprinted from <i>Agricultural Research</i> , June 1975; published by the <i>Agricultural Research Service, U. S. Department of Agriculture</i> .
	BB	"A Polymeric Absorbent Seeks Problems to Solve," by George F. Fanta, M. Ollidene Weaver, and William M. Doane, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; reprinted from <i>Chemical Technology</i> , Vol. 4, November 1974, pp. 675-676.
	BC	"Dispersions or Solutions? A Mechanism for Certain Thickening Agents," by N. W. Taylor and E. B. Bagley, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 18, pp. 2747-2761 (1974).
↓	BD	"Gel Sheets Produced by Hydration of Films from the Potassium Salt of Hydrolyzed Starch-Polyacrylonitrile Graft Copolymer," by M. O. Weaver, E. B. Bagley, G. F. Fanta, and W. M. Doane, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Applied Polymer Symposium No. 25</i> , 97-102 (1974).

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							YES	NO
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tt	BN	"Hydrolyzed Starch-Polyacrylonitrile Graft Copolymer Solutions: Effect of Shear History on Transient and Steady-State Viscoelastic Behavior," by E. B. Bailey and N. W. Taylor; <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>J. Polymer Sci.: Symposium No. 45</i> , 185-196 (1975).
	BO	"Kinetics of Grafting Acrylonitrile onto Starch," by L. A. Gugliemelli, C. L. Swanson, and W. M. Doane, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Polymer Science: Polymer Chemistry Edition</i> , Vol. II, 2451-2462 (1973).
	BP	"Continuous Production of Acrylonitrile-Starch Graft Copolymers by Ceric Ion Catalysis," by Zoila Reyes, Carroll F. Clark, Frederick Dreier, and Russell C. Phillips, <i>Stanford Research Institute, Menlo Park, Calif. 94025</i> ; and C. R. Russell and C. E. Rist, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; reprinted from <i>I&EC Process Design & Development</i> , Vol. 12, Page 62, January 1973.
	BQ	"Polyacrylonitrile Distribution in Grafted Starch Granules Determined by Scanning Electron Microscopy," by George F. Fanta, F. L. Baker, Robert C. Burr, W. M. Doane, and C. R. Russell, Peoria, Illinois (USA); <i>Die Stärke 25</i> , Jahrg. 1973 / Nr. S, S. 157-161.
	BR	"Starch-Cerium(IV) Complexes in Aqueous Media: Formation, Isolation, and Stability," by L. A. Gugliemelli, W. M. Doane, C. R. Russell, and C. L. Swanson, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Polymer Letters</i> , Vol. 10, pp. 415-421 (1972).
↓	BS	"Hydrolyzed Starch-Polyacrylonitrile Graft Copolymers: Effect of Structure on Properties," by M. O. Weaver, L. A. Gugliemelli, W. M. Doane, and C. R. Russell, <i>Northern Regional Research Laboratory, Northern Marketing and Nutrition Research Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 15, pp. 3015-3024 (1971).

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							YES	NO
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

tt	CC	"Molecular Weight Distribution of the Polyacrylonitrile Moiety of Starch-Polyacrylonitrile Graft Copolymers," by L. A. Gugliemelli, M. O. Weaver, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Polymer Letters</i> , Vol. 9, pp. 151-155 (1971).
	CD	"Rheological Method of Investigating Reaction between Cerium(IV) and Starch," by L. A. Gugliemelli, M. O. Weaver and C. R. Russell, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Polymer Letters</i> , Vol. 9, pp. 711-716 (1971).
	CE	"Copolymers of Starch and Polyacrylonitrile. Influence of Granule Swelling on Copolymer Composition under Various Reaction Conditions," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, a laboratory of the Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; J. Macromol. Sci.-Chem.</i> , A4(2), pp. 331-339 (1970).
	CF	"Modification of Wheat Starch by Initiating Systems Used for Graft Polymerization," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, a laboratory of the Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Reprinted from Cereal Chemistry, Jan., 1970, Vol. 47, No. 1, pp. 85-91.</i>
	CG	"Base-Hydrolyzed Starch-Polyacrylonitrile (S-PAN) Graft Copolymer. S-PAN-1:1, PAN M. W. 794,000," by L. A. Gugliemelli, M. O. Weaver, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Applied Polymer Science</i> , Vol. 13, pp. 2007-2017 (1969).
✓	CH	"Copolymers of Modified Starches with Polyacrylonitrile," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Polymer Science: Part A-1</i> , Vol. 7, pp. 1675-1681 (1969).

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							YES	NO
CQ								

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

tt	CR	"Copolymers of Starch and Polyacrylonitrile: The Dilution Effect," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 13, pp. 133-140 (1969).
	CS	"Copolymers of Starch and Polyacrylonitrile: The Soluble Fraction," by George F. Fanta, Glen E. Babcock, and Robert C. Burr, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Polymer Science: Part A-1</i> , Vol. 7, pp. 980-982 (1969).
	CT	"Copolymers of Wheat Starch and Polyacrylonitrile. Effect of Aqueous - Organic Solvent Systems on Copolymer Composition," by Robert C. Burr, George F. Fanta, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>J. Macromol. Sci. - Chem.</i> , A2(1), pp. 93-101 (1968).
	CU	"Graft Copolymers of Starch. III. Copolymerization of Gelatinized Wheat Starch with Acrylonitrile. Influence of Chain Modifiers on Copolymer Composition," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 11, pp. 457-463 (1967).
	CV	"Influence of Swelling and Disruption of the Starch Granule on the Composition of the Starch-Polyacrylonitrile Copolymer," by Robert C. Burr, George F. Fanta, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>J. Macromol. Sci. - Chem.</i> , A1(7), pp. 1381-1385, Nov., 1967.
✓	CW	"Graft Copolymers of Starch. I. Copolymerization of Gelatinized Wheat Starch with Acrylonitrile. Fractionation of Copolymer and Effect of Solvent on Copolymer Composition," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604</i> ; <i>Journal of Applied Polymer Science</i> , Vol. 10, pp. 929-937 (1966).

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							YES	NO
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tt	DG	"Graft Copolymers of Starch. II. Copolymerization of Gelatinized Wheat Starch with Acrylonitrile: Influence of Reaction Conditions on Copolymer Composition," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, <i>Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Polymer Letters</i> , Vol. 4, pp. 765-769 (1966).
	DV	D. Trimnell et al., <i>Graft Polymerization of Methyl Acrylate onto Granular Starch: Comparison of the Fe⁺²/H₂O₂ and Ceric Initiating Systems</i> , 60 J. Applied Polymer Sci. 285 (1996).
	DW	George F. Fanta, <i>Starch Graft Copolymers</i> , in 10 Polymeric Materials Encyclopedia 7901 (Joseph C. Salamone ed., 1996).
	DX	George F. Fanta et al., Note, <i>Graft Polymerization of Methyl Acrylate-Vinyl Acetate Mixtures onto Starch</i> , 49 J. Applied Polymer Sci. 1679 (1993).
	DY	George F. Fanta et al., <i>Factors Influencing Absorbent Properties of Saponified Starch-g-Polyacrylonitrile Isolated by Methanol Precipitation</i> , 36 Starch/Stärke 416 (1984).
	DZ	George F. Fanta et al., <i>Polysaccharide-g-Polystyrene Copolymers by Persulfate Initiation: Preparation and Properties</i> , 28 J. Applied Polymer Sci. 2455 (1983).
↓	EA	George F. Fanta & William M. Doane, Saponified Starch-g-Polyacrylonitrile and Related Absorbents at 26, fig. 1 (Aug. 27, 1981) (unpublished manuscript, on file with Northern Regional Research Center, Agricultural Research Service, U.S. Department of Agriculture, Peoria, Illinois 61604).

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